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PAPERS

IN

CHEMISTRY.

No. I.

THERMOMETER.

The SILVER ISIS MEDAL was presented to Mr. ROBERT JOWETT for his Thermometer for Corrosive Liquids, which has been placed in the Society's Repository.

65, John Street, Fitzroy Square,
Feb. 28, 1831.

SIR,

HAVING made what I consider an improvement in the construction of thermometers for chemical purposes, I desire to lay it before the Society of Arts. The improvement consists in the tube of the thermometer being enclosed within a larger glass tube, and the scale placed between the two. By this arrangement the scale is placed beyond the reach of any fluid into which the thermometer may be introduced, and banishes the necessity of having part of the scale to turn up with a hinge. The only thermometers I know of that have these advantages are two: 1st, Those which have the scale engraved upon the glass itself; and 2d, A French one, in which the scale is fixed in one tube, and the thermometer affixed to the outside of it. I consider that the improved thermometer may be made considerably cheaper than those with the scale engraved upon the glass, to say nothing of the liability of their breaking at the marks engraved upon them. In the French thermometer the bulb is very liable to be broken off; and it would be almost impossible to put them through a stuffing-box, &c., for which purpose the thermometer I now offer to the consideration of the Society would be peculiarly adapted.

I am, Sir, &c. &c.

A. Aikin, Esq. ROBERT JOWETT.
Secretary, &c. &c.

Mr. Jowett's thermometer is constructed by placing a thermometer-tube within another thinner one, and securing the former in the axis of the latter by means of two perforated corks or leather collars, *a b*, fig. 2: to these collars thin wires or strong threads, *c c*, are to be previously attached, in order that by means of them they may afterwards be readily withdrawn. The two tubes are then to be melted together at one end by a blowpipe, and a bulb is to be blown to the inner tube, the diameter of which should be precisely equal to that of the outer tube, that they may mutually support each other while in the case. The bulb is then filled with mercury, and the two fixed points of temperature, viz. the freezing and boiling of water, being obtained in the usual way, are marked on the outer tube. The distance between these points being laid off on a slip of paper, is subdivided into degrees, according to the system or systems of graduation employed, and the degrees above and below these points are also laid off. The outer tube is now to be cut off about an inch and a half higher than the highest degree

Fig. 2

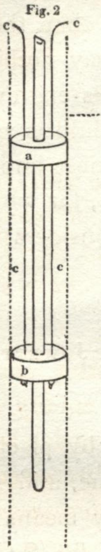


Fig. 3

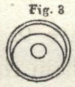
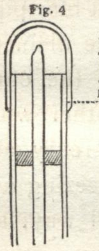
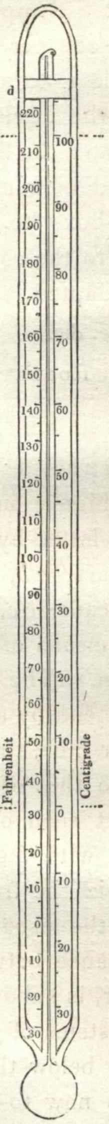


Fig. 4





would reach to, and the thermometer-tube is to be hermetically sealed as low down within the outer tube as can be reached. The collars, *a b,* are then carefully withdrawn; and the paper containing the scale or scales being bent round, as shewn in fig. 3, is introduced between the two tubes; so adjusting its length, that the bottom of it shall rest at the junction of the tubes just above the bulb, when the freezing point on the scale corresponds with that previously marked on the outer tube. A closely fitting collar of soft cork, *d,* is now to be put on the inner tube, and slidden down till it just touches the paper scale; thus fixing this in its place, and also giving support to the inner tube. Finally, the open end of the outer tube is to be very carefully heated till it has become soft, and, being then beaten a little down to thicken it, is to be drawn out and closed, keeping it quite clear of the inner tube. Or the outer tube may be cut off somewhat below the level of the inner one, and then covered by a thin glass cap, which may be cemented to the tube by the adroit use of the blow-pipe, as shewn in fig. 4.